REMARKS

This Amendment is responsive to the Final Office Action dated November 3, 2004. Applicant has amended independent claims 36, 50, and 54, and canceled claim 48. Claims 36-47 and 50-56 are pending.

Applicant believes that the current amendments do not raise any new issues and would not require any additional search by the Examiner. Applicant has amended the independent claims to include limitations similar to those previously presented in dependent claim 48. Applicant has also amended the independent claims to recite that the desired replica pattern has flat coplanar land tops that define widths in a range of 80-200 nanometers and groove depths in a range of 20-120 nanometers. Applicant has also clarified that the groove bottom widths of the master pattern are defined substantially independently of master groove depth of the master pattern. Thus, for inverted replicas, the widths of land tops can be defined substantially independently of groove depth.. The amendments to the current claims find support in FIG. 12 of Applicant's specification, and the corresponding discussion in Applicant's Detailed Description. Entry of this after-final amendment is courteously solicited.

As Applicant has amended the independent claims to recite the limitations of claim 48, the only outstanding rejection is the rejection of claims 36-56 under 35 U.S.C. 103(a) as being unpatentable over Arakawa et al. (JP 08-306080) in view of Okada et al. (US), Kashiwagi et al (EP 0418897), Daecher et al. (US 6,183,829), Ohtomo et al. (US 5,763,037), Folger et al. (US 3,565,978), and Horie et al. (US 5,581,539).

Applicant respectfully traverses the rejection to the extent such rejections may be considered applicable to the claims as amended. The applied references fail to disclose or suggest the inventions defined by Applicant's claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

In particular, Applicant incorporates herein the arguments previously presented in previous responses regarding the limitations of Applicant's claims that require the desired replica pattern defining a track pitch less than 2 multiplied by the laser spot size of the laser. Applicant submits that none of the applied references discloses or suggests a technique in which a desired replica pattern can be defined to have a track pitch less than 2 multiplied by the laser spot size of the laser.

Applicant also wishes to address the Examiner's previous remarks regarding "intended use." In previous Office Actions, the Examiner has indicated that the requirement that the master pattern be inverse of the desired replica disk pattern is nothing more than an intended use limitation. While Applicant still disputes the Examiner's position on this issue for reasons stated on the record, Applicant feels that the current amendment addresses the Examiner's concern on this point, insofar as the independent claims now recite not only the creation of the master with the inverse pattern, but also the creation of a first generation stamper from the master, the creation of a second generation stamper from the first generation stamper, and the creation of replica disks from the second generation stamper. Accordingly, the Examiner should now recognize that the inverted relationship between the master and the replicas is very well defined in the pending claims, in a structural fashion.

Applicant also wishes to address the Examiner's previous remarks regarding "duty cycles" greater than 50%. Applicant agrees with the Examiner that if a duty cycle is greater than 50%, the track pitch can be made less than two times the dimension of a particular master feature at very large track pitches. However, feature dimension is not equivalent to the spot size of the laser, as a given spot size can be used to create differently sized features, e.g., given different exposure times or development criteria. Moreover, at track pitches less than approximately 700 nanometers, as claimed, the Examiner's argument with respect to duty cycles would not apply. Therefore, Applicant disputes the Examiner's reliance on duty cycles greater than 50% as being a way to achieve track pitch less than two times the spot size of the laser. Using conventional techniques, overlapping exposures over successive Gaussian laser spots would make it difficult or impossible to achieve track pitch less than two times the spot size of the laser, regardless of the duty cycle. At track pitches less than approximately 700 nanometers, overexposure is clearly problematic and the ability to define large duty cycles becomes more difficult. In short, the track pitch of less than two times the spot size of the laser is a limiting factor for conventional mastering because of overlapping exposure, regardless of duty cycle and particularly for small track pitches, as claimed.

Nevertheless, Applicant has amended the current claims to even further clarify this issue for the Examiner, and to more clearly define the invention over the prior art of record. In particular, Applicant has amended the independent claims to require that the groove bottom

widths of the master pattern are defined substantially independently of master groove depth of the master pattern. Applicant has also quantified the size of the groove depths, and the groove bottom widths (which correspond to the land tops of the desired replica disk pattern). These amendments to the claims find support in FIG. 12 of Applicant's specification, and the corresponding discussion.

To further illustrate the difference between the pending claims and the prior art, Applicant respectfully requests that the Examiner compare FIG. 4 of Applicant's specification to FIG. 12. FIG. 12 relative to FIG. 4 specifically illustrates certain advantages of the features of the current claims. Applicant notes that FIG. 4 illustrates the results of conventional mastering in which the pattern defined on the master corresponds to the desired replica pattern. Thus, in FIG. 4, the master land widths correspond to replica land widths. As shown in FIG. 4, master groove depth decreases as a function of increased master land width.

In contrast, when the techniques recited in Applicant's claims are used, replica land widths can be defined independently of groove depth, particularly for the feature dimensions shown in FIG. 12. Applicant has now specifically recited in the independent claims, the independence of this relationship between groove depth, and groove bottom width (corresponding to replica land top). In view of this amendment, Applicant feels that the current claims even more clearly distinguish all of the applied references, either alone or in combination.

At this time, Applicant reserves extensive further comment regarding the rejection of claim 48 as being obvious over Arakawa et al. (JP 08-306080) in view of Okada et al. (US), Kashiwagi et al (EP 0418897), Daecher et al. (US 6,183,829), Ohtomo et al. (US 5,763,037), Folger et al. (US 3,565,978), and Horie et al. (US 5,581,539), particularly since the Examiner did not outline this rejection in detail with respect to the features of claim 48. Briefly, however, Applicant feels that the current claims recite a number of features that are not disclosed or suggested in these references, particularly in the context of a replica disk manufacturing process which creates an inverted master, a first generation stamper, and a second generation stamper, and then creates replicas from the second generation stamper that are inverted relative to the master.

Applicant believes that such a reverse mastering, inverted stamping process consistent with the pending claims is not suggested in any of the applied references, either alone or in

combination. In particular, Applicant's claimed feature relating track pitch to spot size of the laser used in the mastering system is not suggested in the prior art. Moreover, the claimed feature requiring the groove bottom widths of the master pattern to be defined substantially independently of master groove depth of the master pattern is also lacking from the prior art. Applicant also believes that the track pitch and feature sizes quantified in the pending claims are not taught by any of the applied references, particularly in the context of a reverse mastering and inverse stamping process. To the extent any of these features might be identified in the prior art individually, Applicants submit that the prior art lacks any motivation that would have led a person of ordinary skill in the art to combine the teaching of the various references to arrive at the inventions currently defined in Applicant's claims.

For at least these reasons, all claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Applicant reserves the right to pursue the subject matter of the claims, prior to this amendment, in one or more continuation applications. Please charge any additional fees or credit any overpayment to deposit account number 09-0069. The Examiner is invited to telephone the below-signed attorney to discuss this application.

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